REMARKS

Claims 7, 10 and 24-33 are pending in the present application. No claims have been amended or canceled, and claims 7, 10 and 24-33 are still pending upon entry of the present amendment.

Reconsideration and allowance of the claims is respectfully requested in view of the following remarks.

Applicant notes with appreciation the withdrawal of the rejections under 35 U.S.C. § 112, first paragraph and the withdrawal of the rejection of Claim 7 under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 5,079,017 to Chen et al. (hereinafter "Chen").

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 7, 10 and 24-33 stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over Chen in view of U.S. Patent No. 4,267,195 to Boudreau et al. (hereinafter "Boudreau") and U.S. Patent No. 6,312,746 to Paluch et al. (hereinafter "Paluch"). Applicants respectfully traverse the rejection.

The present claims are directed to a palatability enhancer for an animal food comprising a reaction product of at least one triglyceride molecule and at least one donor which functions as a donor of elements selected from the group consisting of sulfur, nitrogen, and a combination of sulfur and nitrogen; and at least one second palatability enhancer ingredient prepared by hydrolytic fermentation of at least one type of cohesive animal tissue. The claimed palatability enhancer comprises a "cooked product", that is a reaction product formed between the fat/oil and the donor.

Chen is directed to a flavoring composition prepared by heating a fat or oil to a temperature of 300°C to 475°C. (Abstract) Flavor precursors including "sulfur-containing compounds such as cysteine, cystine, methionine, thiamine, hydrogen sulphide, or sulfur-containing extract from vegetables" may be employed during heating of the fat. (col. 2, ll. 41-43) The flavoring composition can be used to impart flavors to "meats, sauces, soups, etc.". (col. 3, ll. 48-49) There is no mention in Chen of the use of the flavoring compositions in an animal food.

Boudreau is directed to dog food flavors containing "L-proline, L-cysteine, L-histidine, L-lysine, inosine 5'-triphosphate (ITP), inosine 5'-diphosphate (IDP), and adenosine 5'-triphosphate (ATP)". (Abstract) The use of these compounds in dog foods can "increase their palatability to dogs". (Abstract) The flavors can be "applied to the exterior of the fat coating" or incorporated into the dog food by "simple mixing with the other ingredients". (col. 2, ll. 42-46) There is no description of heating or in any way reacting the L-cysteine, etc.

Paluch is directed to a multi-component pet food having inner and outer components. (Abstract) The filling may comprise, for example, hydrolyzed meat protein. (col. 10, l. 61)

In making the rejection, the Examiner states "Chen et al disclose a flavorant obtained by heating an oil/fat and a sulfur-containing compound, such as cysteine." (May 26, 2005 Office Action, page 2). The Examiner also states "[t]he claims differ as to the presence of a second palatability enhancer and the specific use of the product in an animal food." (May 26, 2005 Office Action, page 2). The Examiner further states "Boudreau et al disclose it is well known that cysteine (nitrogen and sulfur containing) serves to increase palatability for dogs." (May 26, 2005 Office Action, page 2). The Examiner also states "Paluch discloses conventional pet food components including hydrolyzed meat protein". (May 26, 2005 Office Action, page3). Finally, the Examiner states "[i]t would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to use the flavorant of Chen et al. in an animal food product because the use of nitrogen/sulfur containing compounds in pet foods is conventional in the art". (May 26, 2005 office action, page 3) Applicants strongly disagree.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

The claims of the present application are directed to a palatability enhancer for an animal food comprising a reaction product and at least one second palatability enhancer ingredient

prepared by hydrolytic fermentation of at least one type of cohesive animal tissue. While Chen discloses reaction products suitable for use as flavorants for human foods, Chen neither teaches nor suggests the use of the flavorants in animal foods. Boudreau teaches the use of cysteine in an animal food and Paluch teaches the use of animal digests in pet food. One of skill in the art, when looking at Chen which is directed to human food flavorings and Bodreau and Paluch which are directed to animal food flavorings would not be motivated to combine these references and further there is no expectation of success for this combination of references.

As is well-known in the art of palatants for animal foods, flavorants that are appealing to humans are not necessarily appealing to animals. Applicants respectfully submit the declarations of Dr. Deborah Roberts and Dr. Chi-Tang Ho under 37 CFR 1.132 for consideration by the Examiner. Both declarants state there is no suggestion or incentive to motivate a skilled artisan to combine the teachings of Chen, Boudreau, and Paluch and a skilled artisan would understand there is no reasonable expectation of success for such a combination. Both declarants state it is impossible to predict whether a flavor compound that is palatable to one species is likely to be palatable to a different species.

In her declaration, attached hereto as Exhibit 1, Dr. Deborah Roberts states that due to the different odor and taste physiology of pets and humans, each species will perceive a chemically identical flavor compound in a different manner. For example, a flavor compound that is liked by one species is not necessarily liked by another species. The differential perception of a flavor compound is due to both genetic and physiological differences in the different species. (See Exh. 1, Tables 1 and 2). Consequently each flavor compound must be developed and tested separately for each species. This evidence precludes a finding of obviousness because, as understood by one skilled in the art, it would be impossible to successfully predict the palatability of a single flavor compound in one species based on the palatability in another species.

In his declaration, attached hereto as Exhibit 2, Dr. Chi-Tang Ho states that it is well-known in the art of palatants for animal foods that flavorants that are appealing to humans are not necessarily appealing to animals. This is particularly true of complex flavors such as the reaction flavor of Chen. (See Exh. 2 ¶ 4). Dr. Ho, like Dr. Roberts, states that this difference in flavor preferences is due to genetic and physiological, e.g, taste receptors, differences as well as

differences in taste perception in the different species. (See Exh. 1, Tables 1-2 and ¶ 4; Exh. 2 ¶¶ 4-5). Further, Dr. Ho states "[w]ithout testing, it is not possible to predict whether a flavor composition that has been employed for humans will be successful for animals." (See Exh. 2 ¶ 7). Therefore, Dr. Ho states "[t]he disclosure of a flavorant for human food as in Chen does not render obvious the use of a palatant for animal foods." (See Exh. 2 ¶ 7).

Thus, without testing, it is not possible to predict whether a flavor composition that has been employed for humans will be successful for animals. Chen et al. do not test their flavor compositions on animals and thus it is not possible to know, from the disclosure of Chen, if the flavor compositions are suitable for use on animal foods. The flavor compositions of Chen may not be effective on an animal food, particularly a dry animal food such as a kibble. The disclosure of a flavorant for human food does not render obvious the use of a palatant for animal foods. One of skill in the art would not combine Chen, directed to flavors for human food, with either Bodreau and/or Paluch which are directed to flavors for animal foods. In the absence of testing such a combination on animals, there can be no expectation of success for the combination.

In addition, due to the differences in the chemical nature of the palatants described in both Chen and Bodreau, one of skill in the art would not be motivated to combine these references. Chen is directed to flavors that are produced by reaction of fat and, for example, cysteine at temperatures of 300°C to 475°C. The flavors of Chen are not cysteine itself, but a reaction product formed between cysteine and fat. Boudreau teaches the use of cysteine as a flavorant in pet food, not the reaction product of cysteine and a fat heated to a temperature of 300°C to 475°C.

Dr. Roberts further clarifies that cysteine reaction products are "very different" both chemically and sensorially from the starting compound of cysteine. (See Exh. 1, ¶ 5). During a reaction such as a Maillard reaction, many odorous volatile compounds are formed that are very different chemically from cysteine. In one example, 47 volatile compounds identified from a reaction with cysteine were 15 aldehydes, 8 alcohols, 7 furans, 6 hydrocarbons, 5 ketones, 3 sulfur-containing compounds, 2 nitrogen-containing compounds and an acid. These compounds also have low odor thresholds so the sensory profile of the reaction flavor is much more meaty than cysteine and ribose by themselves.

In addition, Dr. Roberts states that each chemical reaction can generate a large number of resultant cysteine reaction products depending on a variety of factors including other reactants (e.g., reacting cysteine with a sugar, such as ribose or glucose, or with a fat) as well as conditions of the reaction (e.g., time and temperature). Based on the prior art, one skilled in the art of food science would not consider cysteine a universally equivalent substitute for all of the many possible cysteine reaction products. Therefore, each identified cysteine reaction product must be independently tested for palatability with each species. Further, combinations of flavor compounds can result in unexpected tastes and odors because of synergistic or antagonistic interactions between the flavor compounds. Finally, it is not possible to successfully predict the response to a flavor compound or a combination of flavor compounds in one species based on the response in another species due to the significant genetic and physiological differences in taste and odor perception between humans, dogs, and cats.

Dr. Ho repeats the basic chemical principle described by Dr. Roberts that cysteine and its reaction products with, for example, a fat or a sugar, are chemically distinct and thus produce distinctly different flavors and/or aromas. (See Exh. 1, ¶ 5; Exh. 2 ¶ 8). As both declarants state, one of ordinary skill in the art of flavor science would not use a reaction product of cysteine and a fat or a sugar to replace cysteine.

Further, Boudreau does not provide an expectation of success for the use of a reaction flavor such as that taught in Chen in an animal food. Boudreau only teaches the use of cysteine in pet food, and not the reaction product of cysteine and a fat heated to a temperature of 300°C to 475°C. In fact, as taught in Chen, the variability in flavors produced by reaction of fat and a sulfur-containing compound is high, leading to a "myriad of flavor notes" by varying the "initial fat or oil material employed, the reaction temperature, the intervals of time used for collecting the volatiles". (Chen et al., col. 3, ll. 6-10). It is clear that the reaction products produced in Chen are far more complex than cysteine as disclosed in Boudreau. Boudreau does not provide an expectation of success for the use of such reaction flavors in a pet food.

Regarding Paluch, the Examiner states "Paluch discloses conventional pet food components". (May 26, 2005 Office Action, page 3)

Applicants further submit that Paluch does not cure the defects of Chen and Boudreau. Paluch is directed to a pet food which may comprise ingredients such as a hydrolyzed animal

digest. Paluch, however, does not describe the combination of a reaction flavor such as that taught in Chen and a hydrolyzed animal digest as presently claimed. As stated above, the cited references do not provide the motivation to employ the human food flavorant of Chen in the an animal food flavors. By the same reasoning, one of skill in the art would not combine the human food flavorant of Chen with a hydrolyzed animal digest, an ingredient use in animal foods. Further, as stated by Dr. Ho, combinations of flavors may have synergistic or antagonistic effects. Without proper animal testing, it is therefore not possible to know if a combination of flavors is palatable to an animal. (See Exh. 2 ¶ 10). The references not provide the motivation to use the reaction flavor of Chen in a pet food in combination with a hydrolyzed animal digest and further does not provide an expectation of success for such a combination.

Obviousness may be rebutted by a showing of "unexpected results", i.e., comparative test data showing that the claimed invention possesses unexpectedly improved properties, or properties that the prior art does not have. *In re Dillon*, 919 F.2d 688, 692-93, 16 U.S.P.Q.2d 1897, 1901 (Fed. Cir. 1990). The results must be of both statistical and practical significance. *Ex parte C*, 27 U.S.P.Q.2d 1492, 1497 (Bd. Pat. App. & Int. 1993).

In the present case, the Applicants' examples clearly show unexpected results regarding the palatability of the claimed reaction flavors. In Example 1, a reaction flavor formed from reacting sodium sulfide, anhydrous butter oil, and yeast is added to a digest of chicken livers and coated onto a dog food. Compared to the digest of chicken livers alone, the combination of the reaction flavor and the hydrolyzed chicken livers improves palatabilty 2-3-fold when dogs were tested in a 2-bowl comparison. Similar results were obtained in Examples 2-5 for reaction flavors formed using sodium sulfide and chicken fat. There is nothing in the prior art that would suggest that the presently claimed reaction flavors would improve palatability to dogs, particularly in the presence of a hydrolyzed liver digest which is a known palatability enhancer for dogs.

In addition to the foregoing arguments, Applicants note that several claims were added in the previous amendment that provide additional distinguishing features over the prior art. For an obviousness rejection to be proper, the references must disclose all of the claimed elements. For example, Claims 26-28 further define the donor of claim 7. None of the cited references teach or suggest reacting fat with one of these particular claimed sulfur and/or nitrogen donors. As is known in the art, different flavor precursors will give different flavor notes in the reaction flavors

that are produced. Thus, the reaction products formed by reacting a fat or oil with these claimed donors are novel compared to those in, for example, Chen. The cited references do not render these claims obvious.

Claims 29-32 further define the reaction conditions. Chen teaches reaction temperatures of 300°C to 475°C, which are much higher than the claimed reaction temperatures. Because the temperatures employed in Chen are much higher than the claimed temperatures, the reaction products of Chen would be expected to be different than the reaction products formed at the presently claimed temperatures. Chen specifically states "by varying the initial fat or oil material employed, the reaction temperature, the intervals of time used for collecting the volatiles and the specific combinations of the fractions, a myriad number of flavor notes can be generated from a single fat or oil". (Chen, col. 3, ll. 6-10) Neither Boudreau nor Paluch teaches reaction temperatures. Thus, the reaction products forming the claimed palatability enhancer are novel over the cited art. The cited references neither anticipate nor render these claims obvious.

Claim 33 specifies the second palatability enhancer ingredient as a "digest of chicken livers with hydrolytic enzymes". None of the cited references teach this specific second palatability enhancer ingredient.

For at least the foregoing reasons, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any charges with respect to this Amendment, or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By: Karen A LeCuyer
Karen A. LeCuyer, Ph.D.
Reg. No. 51,928

Date: September 23, 2005
Customer No. 23413
Telephone: (860) 286-2929